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ROLE MODELS' INFLUENCE ON SMOKING REDUCTION

by

PHOEBE S. LIN

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2013

MAJOR: PSYCHOLOGY

Approved by:

Advisor

Date

DEDICATION

For my parents, Vun-Ying Tung-Lin and James Lin.

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It is with many thanks that I acknowledge the tremendous support and guidance provided by my co-advisors Drs. Rusty McIntyre and Antonia Abbey. I owe all of my successes in scholarship to their joint efforts in mentoring my progress throughout graduate school. Thank you Drs. Ira Firestone, Emily Grekin, and Louis Penner for taking the time to provide feedback and additional guidance on this research project. Special thanks to Dr. Margo Bowman for your numerous contributions to my teaching endeavors and success.

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CHAPTER 1 INTRODUCTION

Overview

“They tried to make me go to rehab, I said, ‘No no no’
They tried to make me go to rehab, I won’t go go go”
Amy Winehouse (2006)

Amy Winehouse, singer and songwriter, struggled with tobacco and illegal substance abuse and had a history of arrest for drug possession (NYtimes.com, 2008). In 2008, Winehouse had reportedly been diagnosed with emphysema and urged by her family to discontinue her tobacco and drug use, yet photographs of her smoking were published shortly after (UPI.com, 2008). The aforementioned quote suggests that Winehouse, age 23 at the song’s release, was not as concerned with her health outcomes as others were. Like Winehouse, many young adults neglect their physiological health by engaging in risky behaviors. Winehouse then, could be considered a negative role model to young adult smokers. By experiencing negative health outcomes associated with tobacco use, these consequences may have been made salient to young adults, motivating them to decrease or discontinue smoking behaviors to avoid a similar negative outcome. Health related consequences, however, are often construed as less important to this age group. One reason is that young adults focus themselves more on socially-based rather than health-based consequences. Thus, Winehouse would likely have served more effectively as an influence agent had she instead been ostracized for her behaviors rather than suffering ill health consequences. In terms of smoking reduction programs, it is likely that for younger smokers, the message will be more effective if it concerns aspects of life more central to this age group.

Young adults are typically not as concerned with health outcomes as are other adult age groups. Younger adults tend to focus on education and social networks, middle adults on family, and older adults on fears relevant to health (Nurmi, Poole, & Kalakoski, 1994). These

researchers posited that the concerns of each age group corresponded to the expected track of lifespan development such that younger adults are less likely to be concerned with health outcomes than are older adults perhaps because health concerns are not as proximate, salient, or tangible to young adults. If, however, negative social consequences of smoking are emphasized, this may be more effective at inspiring young adults to stop smoking due to a greater concern with social relationships than with health outcomes for this age group.

It seems reasonable then, that to be more effective, messages targeting young adults should address social rather than health elements of risky behaviors. Thus, role models who address social consequences of risky behaviors should be more effective in motivating young adults to stop smoking than those who focus on health outcomes as young adults are overly concerned with how others perceive, evaluate, and judge them (Parker & Gottman, 1989). The present study investigates the utility of role models as agents of social influence in motivating young adults to stop smoking. Four different types of role models were assessed for effectiveness: a positive health role model, a negative health role model, a positive social role model, and a negative social role model. Based on the premise that social concerns are more tangible and salient than health concerns for young adults, this study evaluated the hypothesis that role models who quit smoking due to social reasons would increase young adults' intentions to quit smoking more than role models who quit due to health reasons. The following sections review the relevant literature.

Social Influence and Role Models

Many social influence manipulations have been developed within psychological research (Deutsch & Gerard, 1955; Kelman, 1958; Milgram, 1963; Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994). One manipulation that holds great potential is role model influence. A role

model is defined as an individual with whom one perceives similarity and a desire to become even more similar by imitating his/her behaviors (Gibson, 2004). This implies that one is motivated to emulate a role model to obtain similar successes or achievements. Research indicates that role models can affect various behaviors and outcomes. Bandura (1986) argued that social learning is rooted in observations of others in common situations, thus much of what is learned in individuals' early years depends on the behaviors of those around them. As such, individuals exposed to role models might vicariously learn specific behaviors associated with tobacco initiation, experimentation, and use.

Research indicates that role models can motivate individuals to strive for academic and occupational success (Lockwood, 2006; Zirkel, 2002), increase self-esteem and self-efficacy (Yancey, Siegel, & McDaniel, 2009; Ziegler & Stoeger, 2008), and boost performance on a cognitive task by alleviating the adverse effects of stereotype threat (Marx and Roman, 2002; McIntyre et al., 2005; McIntyre, Paulson, & Lord, 2003). Most importantly, role models have also been used effectively to increase behavioral intentions in activities related to improving health (Lankford et al., 2003; Lockwood, Chasteen, & Wong, 2005; Lockwood, Wong, McShane, & Dolderman, 2005). Much research has demonstrated that positive role models are effective at promoting positive outcomes in various domains, especially when similarity between the individual and role model is increased or made salient. Goldstein (1979) found that when graduate students and advisors matched on sex, this led to a higher number of publications than when graduate students were mismatched with advisors on sex. Similarly, role models may motivate individuals to strive for academic achievement. Marx and Roman (2002) found that role model competence can increase performance on a cognitive task. When female participants took a difficult mathematics test administered by a competent female experimenter, they

outperformed female participants whose test was administered by a competent male experimenter. In a related line of research, McIntyre and colleagues (2003) found that salient role models inspire success by acting as a buffer against stereotype threat. Female participants were reminded of the stereotype that men tend to outperform women in the domain of math. Participants performed better if they first read essays about successful women, than if they read essays about successful corporations.

Positive role models can influence additional social outcomes. Aronson and O'Leary (1982) found that the mere presence of a role model who complied with the university request to conserve water inspired 49% of participants to do likewise. Furthermore, in the presence of two role models who made an effort to conserve water, 67% of participants followed suit. In another study, researchers found that participants were less likely to litter after having seen a role model pick up trash from the ground and deposit it into a garbage can versus simply seeing the role model ignore the litter (Cialdini, Reno, & Kallgren, 1990).

Research has suggested that role models are best able to induce motivation when they are perceived as excelling in a relevant domain and success appears obtainable. Lockwood and Kunda (1997) found that reading information about relevant role models (i.e. education majors reading about a successful teacher or accounting majors reading about a successful accountant) was more likely to increase motivation to succeed as compared to reading about nonrelevant role models (i.e. education majors reading about a successful accountant or accounting majors reading about a successful teacher). In study 2, the researchers also found that first year students experienced greater inspiration when reading about an outstanding exemplar than did fourth year students reading about the same exemplar. The experimenters reasoned that for first year students, success was within reach, whereas for students in their final year, success was unlikely

since they were at a stage in their education in which they would not have enough time to match the success of the exemplar.

Role models, however, can also influence individuals in ways that lead to negative outcomes. Findings have suggested that nonadherence to professional policies, such as hand-washing in a healthcare setting, can partly be attributed to role models. Studies have found that when an individual in a superior position did not wash his/her hands in the presence of subordinates, subordinates were likely to imitate the behavior by neglecting to wash their hands as well (Eramus et al., 2009; Lankford et al., 2003). Both studies concluded that a negative role model can then lead to negative health outcomes via neglecting to adhere to beneficial health behaviors.

Researchers have also argued that negative role models can motivate individuals to achieve positive outcomes by providing examples of behaviors that should be avoided in order to avoid negative consequences. For example, Lockwood (2002) asked participants read a negative description of college students' first year in which they failed their courses and had an inactive social life. Participants were then asked to think of and write about scenarios that may have led them to experience a similar outcome or simply asked to think of and write about typical activities they experienced on an average day. When participants were induced to think of how they might encounter similar outcomes as encountered by a negative role model, they were more likely to experience increased motivation to avoid these negative outcomes.

Role models can also affect health-relevant behavioral intentions. Researchers demonstrated that both positive and negative health/fitness role models increased motivation to adopt healthy behaviors that would lead to benefits (Lockwood et al., 2005). In one study, participants read information about either a positive role model who engaged in positive health

behaviors or a negative role model who refrained from engaging in positive health behaviors. The positive role models mentioned eating a healthy diet and exercising regularly, saying they preferred to ride a bike rather than drive a car and ate well-balanced meals. The negative role models mentioned that they usually drove or took public transportation and ate fast food almost every day. Results indicated that participants experienced greater motivation, indicated by behavioral intentions, to increase their health behaviors when reading about a positive rather than negative health role model. Participants responded to a questionnaire consisting of 17 items that assessed behavioral intentions regarding health-related activities (e.g. “I plan to avoid eating fast food”; “I plan to exercise”). Participants were more likely to report engaging in more health-relevant activities when reading about the positive role model. Reading about the negative health role model had no significant effects on motivation to increase health via changing behaviors.

In a second study, Lockwood and colleagues (2005) had participants rate the extent that they would be motivated to improve health based on four types of role models: a positive fitness role model, a positive body image role model, a negative fitness role model, and a negative body image role model. The fitness role models were described as either being in excellent or poor physical condition whereas the body image role models were described as either having an attractive or unattractive figure. Results indicated that participants reported greater motivation when reading about positive role models versus negative role models, regardless of whether they emphasized fitness or body image. Participants did not differ in level of motivation after reading about a positive fitness role model versus a positive body image role model. Participants did report, however, that they experienced greater motivation when reading about a negative body image role model versus a negative fitness role model. The authors argued that these findings demonstrate that body image and weight-related concerns are of greater importance to young

adults than are health/fitness concerns, consistent with past findings (Powell, Matacin, & Stuart, 2001). One reason that young adults are showing a greater concern for physical appearance and how this affects others' evaluations of them today than in the past is perhaps due to increasing sizes in social networks among young people (Durvasula & Lysonski, 2008). If a negative body image role model can increase motivation to diet and exercise, a negative social role model then should increase motivation to quit smoking since these concerns are more salient to young adults than are negative health outcomes.

Role Models and Young Adults' Smoking Behaviors

Tobacco use is the largest cause of preventable death and ranks second in contributors to cause of death worldwide (World Health Organization, 2010). The age groups at greatest risk for smoking initiation, experimentation, and addiction include adolescents and young adults because tobacco use typically begins prior to the age of 21 with 90% of smokers initiating smoking behaviors prior to the age of 20 (Chen & Kandel, 1995). Additionally, the age group 18 to 24 has one of the highest rates of tobacco use at 22.2% (Centers for Disease Control & Prevention, 2008). Adolescent smokers are likely to continue tobacco use as they enter young adulthood, which may exacerbate negative health outcomes in later adulthood (Backinger, Fagan, Matthews, & Grana, 2003). Furthermore, young adults aged 18 to 24 have recently shown a decreased rate of smoking cessation attempts (U.S. Department of Health & Human Services, 2008) and 22 to 34% of American college students are regular smokers (Olchowski, Graham, Beverly, & Dupkanick, 2009). Though the detrimental effects of smoking initiation include various negative health outcomes, prevention messages that attempt to deter individuals from using tobacco have not been particularly successful (Jacobs-Quadrel, Fischhoff, & Davis, 1993). The reason for this may be that young adults are not as concerned as they should be with the health risks associated

with tobacco use. A number of studies, however, have indicated that young adults are susceptible to the influence of social exemplars (Hoffner & Buchanan, 2005; Lockwood et al., 2005). Although role model influence and social consequences of tobacco use have been addressed in advertisement campaigns targeting younger smokers, few studies have yet to address the effects of role model influence in smoking cessation (Meier, 1991; Pechmann & Reibling, 2000).

Given that young adults look to others for reasons to initiate or refrain from specific behaviors, it is likely that exposure to role models affects smoking behaviors. Research suggests that the best predictor of an individual's decision to smoke is being exposed to a smoking role model (Pierce, Choi, Gilpin, Farkas, & Merritt, 1996; Carvajal, Wiatrek, Evans, Knee, & Nash, 2000). Findings indicate that adolescents with smoking parents are at a higher risk of using tobacco than are adolescents with nonsmoking parents, as 30 to 60% of adolescents initiate tobacco use if their parents are smokers (Otten, Engels, van de Ven, & Bricker, 2007; Mercken, Candel, Willems, & de Vries, 2009). Additionally, adolescents with smoker parents are less likely to cease tobacco use as they enter young adulthood (Bricker, Rajan, Andersen, & Peterson, 2005). Another major influence on adolescents' decision to smoke is their peer group. Adolescents who smoke are more likely to have smoker friends than non-smoking adolescents, suggesting that individuals may initiate smoking to conform and gain peer approval (Eiser, Morgan, Gammage, Brooks, & Kirby, 1991; Webster, Hunter, & Keats, 1994). A third source of social influence in young adult tobacco use is the media. The media may inadvertently present role models that encourage smoking among young adults. A study found that increased exposure to smoking in films increases the risk of becoming an adult smoker (Dalton et al., 2009).

Other Reasons for Young Adult Tobacco Use

Common reasons for tobacco use among adolescents and young adults include experimentation, addiction, nicotine dependence, anxiety, and emotional distress (Ling & Glantz, 2002; Zvolensky et al., 2006). The most common reasons for young adult smoking, however, are tied to social relationships and physical appearance. One study found that factors predictive of smoking among college students included devaluing athletics, alcohol consumption, considering parties to be an important lifestyle component of the college experience, and being a member of a Greek organization (Emmons, Wechsler, Dowdall, & Abraham, 1998; Sutfin et al., 2012; Sutfin, Reboussin, McCoy, & Wolfson, 2009). Another study indicated that tobacco use is positively correlated with participating in social events and spending time with friends (Mines, Fretz, & Nollen, 1998). Social smokers cite reasons such as impression management and a means to engage in social activity for occasional tobacco use (Brown, Carpenter, & Sutfin, 2011).

Concerns with physical appearance, attractiveness, and body image are also related to tobacco use among adolescents and young adults (Crocker et al., 2001; Minagawa, While, & Charlton, 1993). Young women report smoking to control their body weight and tobacco use is correlated with body dissatisfaction as well as greater preoccupation with gaining weight (Clark et al., 2005; Kristjansson et al., 2011; Pomerleau & Saules, 2007). Correlational research indicates an association between tobacco use and dieting as well as between tobacco use and deviant eating behaviors among young women (Cawley, Markowitz, & Tauras, 2004; Copeland & Carney, 2003; Potter, Pederson, Chan, Aubut, & Koval, 2004; Voorhees, Schreiber, Schumann, Biro, & Crawford, 2002). Among female college students, for instance,

dissatisfaction with one's body image is predictive of higher smoking rates (Clark et al., 2005; Granner, Black, & Abood, 2002; Stickney & Black, 2008).

In a related study, the majority of young adult male smokers were aware of the risks of tobacco use, but those in a long-term romantic relationship with a nonsmoking partner were more likely to cease tobacco use than those who were single, suggesting that concerns with partner evaluations tied to physical appearance may motivate one to cease substance use (Schei, Fønnebø, and Aarø, 1990). Thus, young adults may be motivated to quit smoking for reasons related to vanity and a concern with how others evaluate one's level of physical attractiveness. Compared to nonsmokers, smokers are also more concerned with their physical appearance, but less focused on health and fitness (Clark et al., 2005). Previous studies also indicate that smokers perceive themselves as less attractive than do nonsmokers (Boles & Johnson, 2001). Taken together, the research indicates that some smokers are more concerned with their physical appearance and social image than are nonsmokers. Thus, because young adults are preoccupied with social image (e.g., physical attractiveness), it is likely that cessation techniques will be most effective for young adults if they promote social reasons to discontinue tobacco use.

As suggested by the previously reviewed research on age differences in health concerns, studies indicate that reasons for smoking cessation vary by age group. Younger adults tend to cite financial costs and social influence as a reason to quit smoking whereas older adults generally quit to prevent disease, because of a physicians' recommendation, or due to concerns regarding their children (Grøtvedt & Stavem, 2005; Curry, Grothaus, & McBride, 1997). Intervention and prevention messages that attempt to motivate younger individuals to quit smoking have not been met with great success, although this age group remains the most common and vulnerable target of tobacco companies' advertising campaigns (Jacobs-Quadrel et

al., 1993; Gilpin, White, Messer, & Pierce, 2007). Perhaps the reason for this is that young adults do not perceive these messages as relevant, as they do not believe that they are susceptible to the health risks associated with smoking (Martin et al., 2002). A study on anti-tobacco campaigns examined effectiveness of anti-smoking advertisements and concluded that the factor possessing the most potential for preventing young adult smoking was the use of negative smoking role models (Pechmann & Reibling, 2000). These findings suggest that if a similar role model described negative outcomes associated with smoking to make risks more salient to young adults, perhaps this would decrease perceived invulnerability and lead to greater motivation to cease tobacco use. Arguing that smoking cessation will lead to physical appearance improvements rather than health improvements may better persuade and motivate young adult smokers to quit, as they are more concerned about social rather than health consequences of certain behaviors. Thus, a role model who describes negative outcomes associated with physical appearance (independent of health and fitness) and social life may be more effective at motivating young adults to quit smoking in comparison to a role model who describes negative health outcomes. Research on smoking cessation programs, in fact, recommend incorporating role model influence to enhance motivation and help engage in cognitive-behavioral strategies to increase success rates (Sussman, Sun, & Dent, 2006). Thus, the established view is that negative role models may affect young adults' decision to smoke, but little research within the behavioral sciences has systematically examined role model influence on reducing smoking behaviors to obtain positive outcomes.

Self-Regulation and Role Model Effectiveness

It is important to investigate social influence by both positive and negative role models as a function of individual differences and the different mechanisms by which these role models

influence behaviors. Dispositional differences across individuals can affect whether they are influenced by positive or negative role models. Psychologists differentiate between the processes by which positive and negative role models increase motivation to change behaviors. Positive role models present a possible self that one would like to become (Lockwood & Kunda, 1997, 1999), whereas negative role models represent a possible self that individuals wish to avoid becoming as they do not wish to experience detrimental outcomes that this role model has experienced (Lockwood, 2002).

Higgins (1997; 1998) argued that in terms of self-regulation, individuals can be categorized into one of two orientations: promotion or prevention. Those with a promotion focused regulatory orientation are responsive to positive outcomes such that they are motivated to become their ideal self, focusing on their long-term goals. These individuals are more likely to pursue positive outcomes and success. Those with a prevention focused regulatory orientation, on the other hand, are responsive to negative outcomes and instead avoid negative outcomes or failures. For instance, goal framing as promotion based (able to gain financially) or prevention based (to prevent financial losses) affects individuals' motivation toward goals (Shah, Higgins, & Friedman, 1998).

Positive role models may inspire via promotion goals whereas negative role models may motivate behavioral changes via prevention goals (Lockwood, Jordan, & Kunda, 2002). Those inspired by promotion goals wish to become an ideal self and are motivated by success while those inspired by prevention goals wish to avoid negative outcomes and are motivated to prevent failure to avoid becoming similar to a negative possible self (Higgins, 1997; 1998). Regulatory focus should be relevant to promotion or prevention reasons for quitting smoking. Thus, role models in this study are presented as either quitting smoking to obtain positive outcomes or

quitting to avoid negative outcomes to determine whether individual differences in regulatory focus affect role models' effectiveness. In support of this premise, Aaker and Lee (2001) found that when individuals are matched with a persuasive message in terms of regulatory focus, they recalled more of the message and were more favorable to persuasion. Individuals with a promotion focus who heard a persuasive message about grape juice that emphasized gains (e.g. increased energy levels) responded more favorably to the message. Those with a prevention focus, however, reacted more favorably to a message about grape juice that emphasized avoidance of losses (e.g. lower risk of heart disease).

Although researchers argue that regulatory orientation tends to be stable (Higgins, 1998; Higgins & Silberman, 1998), it can also be affected by situational cues. For instance, individuals are more likely to engage in a specific orientation of regulatory focus when the task is seen as relevant and important (Higgins, 1998). Additionally, a promotion or prevention orientation can be activated by providing performance incentives, such as with the presence of a role model. Lockwood and colleagues (2005) argued that positive role models can cue a promotion strategy to obtain success because individuals inspired by a positive role model will hope to become similar to this person. Similarly, negative role models can activate a prevention strategy to avoid failure because individuals reading about a negative role model will hope to avoid becoming like this person who is experiencing negative outcomes.

Lockwood and colleagues (2002) demonstrated across three studies that regulatory focus determines which type of role model is most effective at increasing motivation in obtaining academic and vocational success. Participants were primed with a prevention or promotion strategy and then read information about a role model (studies 1 and 2). Positive academic role models mentioned winning a scholarship and job opportunities at prestigious companies.

Negative role models discussed struggling with their studies and being unable to find a job. The results indicated a regulatory focus prime and role model type match such that participants primed with a promotion focus were more motivated by the positive role model and those primed with a prevention focus were more motivated by a negative role model. In study 3, the researchers investigated stable regulatory focus disposition related to role model influence. Participants first completed a questionnaire assessing stable prevention or promotion regulatory focus, and then were asked to generate a description of either an experience in which a person's positive outcome inspired them to succeed or one in which another individual's failure motivated them to work harder to avoid a similar negative outcome. As expected, participants with a promotion-based focus were more likely to describe a positive role model whereas those with a prevention based focus were more likely to write about a negative role model, although the researchers did not test whether this cognitive process affected subsequent behavior.

The present study examines role models' influence on smoking cessation with an inclusion of regulatory focus to determine whether a prevention or promotion focus moderates the relationship between role model type and role model influence on behavioral intentions. Those with a promotion orientation should be more motivated to quit smoking when presented with a positive role model; whereas, those with a prevention orientation should be more motivated to cease tobacco use when presented with a negative role model.

Rationale

Smoking among young adults is of great concern among researchers, as this age group is at high risk for encountering negative health outcomes associated with tobacco use and these negative consequences, in turn, lead to increased costs for the healthcare system and society. Young adults are not motivated to cease tobacco use because health concerns are less salient and

tangible than are outcomes relevant to social image and relationships. Young adult smokers, however, may experience greater motivation to stop smoking if negative social consequences of smoking are emphasized rather than negative health consequences of tobacco use. Individuals may also differ in terms of whether they are better motivated to change their behaviors based on receiving information from a positive or negative role model due to differences in regulatory focus.

The objectives of the present study were to examine role model influence on college students' smoking behaviors. Role models emphasized either health outcomes that young adults could experience (e.g. shortness of breath, lowered endurance) or social outcomes associated with smoking (e.g. social ostracism, criticism from friends). Role models also differed by whether they were positive (e.g. able to successfully quit smoking to obtain benefits) or negative. (attempted unsuccessfully to quit smoking and experienced additional difficulties). Thus, the present study utilized a 2 (role model type: positive or negative) X 2 (consequence type: health or social) design. Additionally, measures of both prevention and promotion regulatory foci were included to examine hypotheses about the interaction of role model type with preferred regulatory focus.

The positive health role model mentioned that s/he successfully quit smoking and experienced improvement in fitness and endurance. The negative health role model discussed that s/he unsuccessfully attempted to quit smoking multiple times due to detriments in fitness and endurance as a result of tobacco use. The positive social role model mentioned that s/he successfully quit smoking because of disapproval from friends and s/he wished to gain reacceptance. The negative social role model discussed that s/he unsuccessfully attempted to quit smoking multiple times because of ostracism from friends due to disapproval of smoking.

Past research has primarily investigated responses to health messages via behavioral intentions using self-report measures. The present study is innovative in two ways. First, the implicit association test (IAT) was used to measure implicit attitudes in addition to self-reported behavioral intentions such that implicit attitude responses would not be subject to mismeasurement associated with social desirability bias (Nosek, Greenwald, & Banaji, 2005). Additionally, researchers argue that the IAT is high in predictive validity and a better predictor of attitude-relevant behaviors than are self-report measures (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). Second, participants' smoking behavioral intentions were assessed two weeks after the intervention. Most studies only assess intentions immediately after the intervention (Lawton, Conner, & McEachan, 2009; Lockwood et al., 2005; Sparks, Conner, James, Shepherd, & Povey, 2001).

Hypotheses

Thus, the following hypotheses were investigated:

1. As compared to participants exposed to health role models, participants exposed to social role models will have stronger behavioral intentions to reduce smoking immediately and at the two week follow-up.
2. For participants with a strong promotion focus, exposure to positive role models will be associated with stronger behavioral intentions to reduce smoking than will exposure to negative role models immediately and at the two week follow-up.
3. For participants with a strong prevention focus, exposure to negative role models will be associated with stronger behavioral intentions to reduce smoking than will exposure to positive role models immediately and at the two week follow-up.

4. The more strongly participants identify with the presented role model, the greater their self-reported behavioral intentions to reduce smoking and the more negative their attitudes toward tobacco use as assessed via the IAT.
5. The higher the behavioral intentions to reduce tobacco use after the first session, the higher the behavioral intentions to reduce tobacco use at the second session.

CHAPTER 2 THE PILOT STUDY

Prior to conducting the main study that evaluated the hypotheses described in the previous section, a pilot study was conducted. Brief vignettes were developed to reflect the four types of role models of interest: a positive health role model, a negative health role model, a positive social role model, and a negative social role model. These were contrasted with a control condition in which no role model was presented.

Participants

Participants were 78 undergraduate students (19 male and 59 female) enrolled in a psychology course who participated in exchange for partial course credit.

Procedure

Participants were told that they would take part in a study investigating social influence on health behaviors. Participants were randomly assigned to read information about a positive health role model, a negative health role model, a positive social role model, a negative social role model, or no role model. The positive role health role model mentioned quitting smoking to benefit physical fitness whereas the negative health role model discussed detriments in physical fitness associated with tobacco use. The positive social role model stated that s/he stopped smoking because due to disapproval of tobacco use from friends whereas the negative social role model mentioned that his/her friends did not condone tobacco use and began ostracizing him/her for smoking. Those in the control condition did not read an essay, but simply responded to the questionnaire. In all conditions, participants then reported their behavioral intention to quit smoking by indicating their responses on a seven-point Likert scale (1 being “strongly disagree” and 7 being “strongly agree”). When all participants had completed the materials, they were debriefed and thanked for their participation. These procedures were approved by the IRB (see Appendix A).

Results and Discussion

The data were analyzed in a one way analysis of variance (ANOVA) comparing the five groups. The ANOVA was significant, $F(4, 73) = 4.36, p = .003$. As can be seen in table 1, post-hoc Tukey analyses indicated that participants who read information about a role model had stronger intentions to quit smoking than did participants in the control condition who did not read about a role model. Contrary to hypothesis, the role model types did not differ significantly from each other.

These findings demonstrate that reading about any role model affected intentions to quit smoking, but they did not show the expected differences between types of role models. Thus, the vignettes were revised. The present study used modified essays such that role models' descriptions were more compelling and provided greater detail highlighting consequences of smoking and reasons for wanting to quit smoking.

CHAPTER 3 THE PRESENT STUDY

Participants

One hundred and seventy students (127 females and 43 males with a mean age of 21.24; $SD=4.37$) enrolled in psychology courses at Wayne State University participated in the study for partial course credit. The sample consisted of 17.6% African Americans, 18.8% Arab Americans, 15.9% Asian Americans, 34.7% Caucasians, 1.8% Latino/Latina, and 11.2% other ethnic background.

Procedure

Prior to data collection, approval of all human subject procedures was obtained from the Institutional Review Board (see Appendix A). The present study utilized a two session design. In the first session, after reading through a research information sheet and giving informed consent, participants were told that they would partake in two related studies with the second session taking place in two weeks. They were told that the purpose of the study was to investigate attitudes toward tobacco use and they would complete two picture sorting tasks, respond to various survey items, and evaluate a brief essay.

Implicit Association Test administration. After reading the research information sheet, participants were seated in front of a computer and the implicit association test (IAT) was presented on the screen. This procedure assessed the strength of implicit attitudes toward tobacco use via a forced choice procedure. The IAT is often used to assess unexpressed biases toward stimuli in addition to questionnaires assessing explicit attitudes (Nosek et al., 2005). With the IAT, stimuli are administered in pairs along with a positive or negative word. Participants then choose which stimulus to associate with the word. The IAT is used to measure the strength of associations toward a given stimulus assessed via reaction time (Greenwald, McGhee, &

Schwartz, 1998). The IAT has demonstrated significant correlations between implicit and explicit attitudes (average $r = .60$). The purpose of this initial IAT in the present study was to assess baseline implicit attitudes toward smoking. Participants were first presented with instructions stating that they should note the concept words (“Good vs. Bad” or “Smoking vs. Dessert”) at the top of the screen. They were then instructed to press the “E” key for images or words described by the left concept and the “I” key for images or words described by the right concept. They were also told to sort the stimuli as quickly as possible and that a red “X” would appear at the center of the screen if they responded incorrectly.

The IAT consisted of 24 pictures, similar to the methodology used by Waters, Carter, Robinson, Wetter, Lam, and Cinciripini (2007) such that 12 pictures were related to desserts and 12 were relevant to tobacco use. The IAT consisted of seven trials. In the first trial, the concepts were “Bad” or “Good” and participants were given the task of sorting positive words (“happiness,” “freedom,” “paradise,” “honesty,” “honor,” “joy,” “loyalty,” “enjoyable,” “peace,” and “love”) from negative words (“pain,” “agony,” “evil,” “dirty,” “terrible,” “poverty,” “awful,” “sickness,” “failure,” and “suffering”). In the second trial, the concepts were “Smoking” or “Dessert” where participants sorted smoking pictures from dessert pictures. In the third and fourth trials, the concepts were “Smoking and Bad” or “Dessert and Good” and participants sorted smoking pictures from dessert pictures as well as negative words from positive words. In the fifth trial, the concepts were “Dessert” or “Smoking” and participants again sorted between the two types of pictures. In the sixth and seventh trials, the concepts were “Dessert and Bad” or “Smoking and Good” and participants sorted dessert pictures from smoking pictures as well as negative words from positive words. All stimuli were presented in randomized order. Participants’ reaction times were recorded to determine baseline attitudes toward tobacco use.

Questionnaire administration. Next, in this initial session, participants reported demographics information including age, sex, ethnic background, and current smoking behaviors (see Appendix B), then completed the promotion/prevention regulatory focus scale (see Appendix C). This 18-item scale (Lockwood, Jordan, & Kunda, 2002) consisted of nine promotion focused items (“My goal right now is to achieve my ambitions”) and nine prevention focused items (“My goal right now is to avoid becoming a failure”). Participants’ responses were assessed via agreement or disagreement on a seven-point Likert scale. Both subscales have demonstrated satisfactory reliability (promotion $\alpha = .81$, prevention $\alpha = .75$; Lockwood et al., 2002). In this study the alpha for the promotion subscale was .84 and for the prevention subscale .85.

Role model manipulation. Participants were then randomly assigned to read about a positive health role model, negative health role model, positive social role model, or negative social role model (see Appendix D for the full text of the vignettes). The gender and ethnic background of the role models varied based on participants’ gender and ethnicity. African American participants were assigned to read about African American role models while other ethnic groups were assigned to read about the Caucasian role models. The role models were presented as college students who were dealing with challenges relevant to this age group. The positive health role models mentioned that they quit smoking to improve health whereas the negative health role models reported experiencing poor health, saying they wished to quit smoking to avoid additional negative health outcomes. The positive social role models stated that they recently stopped smoking to improve physical appearance and friendships. The negative social role models, however, mentioned experiencing difficulties with physical appearance and friendships, stating that they wanted to quit smoking to avoid additional negative social

outcomes. After reading the essay, participants evaluated the role model on health, how active of a social life the role model had (to serve as manipulation checks), whether they identified with the role models, and whether they felt a connection with the role models.

Assessment of behavioral intentions. Participants then reported their behavioral intentions related to smoking on a seven-point Likert scale (with 1 being “strongly disagree” and 7 being “strongly agree”). The behavioral intentions scale consisted of eight items assessing willingness to reduce smoking using “no cost” methods (“I plan to quit smoking within the next two weeks”) and willingness to reduce smoking using methods involving financial costs and maintenance (“I would be willing to use a nicotine patch to help me quit smoking”). See Appendix E for the full measure. This scale was first developed specifically for the pilot study, utilized in both the pilot and present study.

Second IAT administration. The final component of the first session was a second IAT administration. Participants then completed the IAT a second time to determine potential changes in implicit attitudes toward smoking as a result of role model exposure.

Follow-up session. After a two-week delay, participants were contacted via the online research participation system and asked to complete the second session. Participants were given the options of completing the attached questionnaire and returning it to the experimenter via email, mail, or contacting the experimenter to set up a second session in the laboratory. No participants chose to set up a return visit to the laboratory and the vast majority opted to return the questionnaire via email. The questionnaire administered at time 2 consisted of the same behavioral intentions to reduce smoking scale administered during in the first. Afterward, participants were given a debriefing letter and thanked for their participation.

Results

One hundred and ninety participants completed the first session of the study. Twenty participants did not complete the measures at time 2, thus 170 participants were included in the analyses.

Preliminary Data Analyses

Data cleaning. There was no missing data. Prior to conducting analyses, the data were screened for potential outliers. No cases consisted of extreme outliers, which were defined as more than three standard deviations from the mean. Participants' demographics information (age, gender, and ethnic background) did not have any significant effects on any variables of interest and therefore are not discussed further.

Scale construction. The eight items intended to assess behavioral intentions to reduce smoking were examined in principal components analysis (PCA) conducted separately with time 1 and time 2 data. Four of the eight intention measures loaded highly on one factor that accounted for 51.35% of the variance at time 1 and 53.85% at time 2. These four measures (cutting back on the number of cigarettes smoked per day, willingness to quit in the next two weeks, to quit in the next month, and to quit in the next six months) were combined into a summed score. Cronbach's coefficient alpha was .70 at time 1 and time 2. The remaining four items were not included in further analyses as they only accounted for 18.54% of the variance at time 1 and 18.05% at time 2.

Hypothesis 1: The Effects of Role Model Type on Smoking Cessation Intentions

A 2 (positive vs. negative role model) X 2 (health vs. social consequences) ANOVA was conducted to examine the hypothesis that exposure to social role models would be associated with stronger smoking cessation intentions than exposure to health role models at both the time 1

and time 2 assessments. No main effects or interactions with type of role model (positive vs. negative) were hypothesized, thus only the main effect of consequences (health vs. social) was expected to be significant. Neither of the main effects or the interaction was significant at either time point ($F_s < 1.9$; see table 2).

In exploratory analyses, two covariates were added. In these analyses, number of times one had attempted to quit in the last year was included as a covariate. Those who had attempted to quit smoking numerous times may have differed in terms of motivation to reduce smoking compared to those who had not attempted to quit, thus the individuals may have differed in their responses to role model information emphasizing outcomes of tobacco use. Role model identification was also chosen as a covariate because past findings indicate that role models are most effective when the target believes that he/she may encounter comparable outcomes to the role model based on role model similarity and/or relevance (Lockwood & Kunda, 1997). The ANCOVAs indicated no significant interactions or main effects for health versus social role models at either time point ($F_s < 2.3$; see table 3). The analyses did indicate that negative role models ($M = 22.65$; $SD = 5.43$) were more effective in increasing willingness to reduce smoking than were positive role models ($M = 21.71$; $SD = 5.74$) at time 1, $F(3, 166) = 3.26$, $p = .073$, though this effect was marginally significant. At time 2, negative role models ($M = 22.30$; $SD = 6.39$) were significantly more effective in increasing behavioral intentions to reduce smoking than were positive role models ($M = 21.20$; $SD = 6.11$), $F(3, 166) = 3.97$, $p < .05$. Post-hoc analysis indicated that negative role models were better predictors than were positive role models of behavioral intentions to reduce smoking ($p < .05$, by Tukey). A repeated measures ANOVA also indicated that negative role models were more effective at motivating participants to quit smoking across time, $F(1, 167) = 5.24$, $p < .05$.

Hypotheses 2 and 3: Moderating Effects of Regulatory Focus

Hypothesis 2 and 3 stated that individual differences in regulatory focus would determine whether smoking reduction intentions were more influenced by positive or negative role models. These hypotheses were evaluated in regression analyses PROCESS (Hayes, 20120), an SPSS program specifically created to probe interactions to test for moderation. As researchers have found regulatory focus to moderate the relationship between role model type (positive versus negative) and willingness to change behaviors (Lockwood et al., 2002), the present study analyzed whether positive or negative role models predicted willingness to reduce smoking conditional on low or high prevention/promotion focus. Neither hypothesis was supported as no moderation effects were found for regulatory focus at either time 1 or time 2. For prevention oriented individuals at time 1, no significant effects were found, $b = 0.28$, $SE = .10$, $t(166) = 2.78$, $p = ns$ (see Figure 1 for the simple slopes analyses). The lack of interaction indicates that the slopes for the relationship between role model type and willingness to reduce smoking were not significantly different for participants low in prevention versus participants high in prevention. Similar analyses indicated no significant effects for whether role model type predicted smoking reduction intentions for low or high prevention focus at time 2, $b = 0.22$, $SE = .082$, $t(166) = 2.72$, $p = ns$ (see Figure 2). No significant effects were found for whether low or high promotion focus moderated the relationship between role model type and behavioral intentions to reduce smoking at either time 1, $b = 0.090$, $SE = .12$, $t(166) = 0.77$, $p = ns$ (see Figure 3), or time 2, $b = 0.069$, $SE = .093$, $t(166) = 0.73$, $p = ns$ (see Figure 4).

Hypothesis 4: The Effects of Role Model Identification on IAT Responses and Self-Reports

Evaluation of the fourth hypothesis required use of two responses obtained after participants read the role model stories. As can be seen in Appendix E, participants were asked to

respond on a seven-point Likert scale (1 being “not at all” and 7 being “very much”) to the items “How likely is it that you could become like the person your read about?” and “How much of a connection did you feel with the person while reading the essay?” (which were combined to form a summed score). The analyses indicated significant correlations between role model identification and behavioral intentions to quit smoking at time 1 ($r = +.18, p < .05$) and time 2 ($r = +.19, p < .05$), but there was not a significant correlation between role model identification and changes in implicit attitudes toward smoking assessed via the IAT ($r = -.14, p = \text{ns}$).

Hypothesis 5: Behavioral Intentions at Time 1 Related to Time 2

The analyses indicated a significant correlation between behavioral intentions to reduce smoking at time 1 and behavioral intentions to reduce smoking at time 2 ($r = +.54, p < .01$).

Discussion

The main objective of the present study was to investigate the effects role models have had on reducing smoking. It was hypothesized that social role models would be more effective than would health role models at reducing smoking behaviors (hypothesis 1), regulatory focus would moderate the relationship between role model type and willingness to reduce smoking (hypotheses 2 and 3), higher identification with the presented role model would predict smoking reduction assessed via self-reports as well as the IAT (hypothesis 4), and stronger behavioral intentions to reduce smoking at time 1 would predict stronger behavioral intentions to reduce smoking at time 2 (hypothesis 5). Results indicated that health versus social role models did not significantly differ in motivating participants to reduce smoking, regulatory focus did not moderate the relationship between role model type and willingness to reduce smoking at either time 1 or time 2, role model identification was significantly correlated with willingness to reduce smoking assessed via self-reports at time 1 and time 2 although it was not significantly related to

attitude changes toward tobacco use assessed via the IAT, and greater willingness to reduce smoking at time 1 predicted greater willingness to reduce smoking at time 2.

The hypothesis that social rather than health role models would inspire greater willingness to quit smoking was not supported, as participants did not significantly differ in their smoking reduction behaviors in response to social versus health role models. This may have been due to the presentation of the manipulation/intervention. Public health campaigns and advertisements have typically used visual stimuli, such as videos and pictures, to make outcomes of tobacco use salient. Perhaps in the present study, more robust findings were not obtained due to the use of essays rather than visual stimuli highlighting the health and social consequences of smoking. Findings have indicated that different modes of persuasion elicit varying levels of perceived favorability and attitude change toward the message. When messages are complex and difficult to process, written rather than visual messages are more persuasive. In contrast, when messages are low in complexity and easy to comprehend, visual rather than written messages are more effective at inducing attitude change (Chaiken & Eagly, 1976). In the present study, the messages presented by role models were easy to process, thus it is possible that a visual message would have been more effective at inducing smoking reduction. Additionally, reactions to persuasion differ by whether the message is qualitative (narrative) versus quantitative (statistical). Both qualitative and quantitative messages are effective in eliciting short-term attitude change, but qualitative evidence is more likely to induce long-term or persistent attitude change and higher recall rate of the information (Kazoleas, 1993). Follow-up investigations should vary the presentation of the message to examine visual versus written messages as well as qualitative versus quantitative information to determine the best method of motivating individuals to reduce smoking.

The hypotheses that regulatory focus would moderate the relationship between role model type and behavioral intentions to reduce smoking were not supported. Findings have demonstrated that regulatory focus can be primed via situational cues such that individuals adopt a regulatory focus consistent with how to best achieve a desired outcome (Higgins, 1998). Thinking about a positive/successful role model may activate a promotion focus, motivating one to obtain success while thinking of a negative/unsuccessful role model may activate a prevention focus, motivating one to avoid failure. In the present study, regulatory focus did not moderate the relationship between role model type and intentions to reduce smoking, possibly due to the manipulation. Future investigations should vary extremity of positive outcomes associated with reducing smoking as well as negative outcomes associated with tobacco use to determine whether severity of a success or failure may activate a specific regulatory focus.

Stronger role model identification was significantly related to smoking reduction at time 1 and time 2 as assessed via self-reports. This is consistent with past findings indicating that the greater the perceived similarity between an individual and role model, the more likely the individual is motivated to imitate the role model to obtain similar outcomes (Goldstein, 1979; Lockwood, 2006; Lockwood & Kunda, 1997; Marx & Roman, 2002; McIntyre et al., 2003). Thus, in the present study, higher perceived similarity between the participant and role model increased predicted higher willingness to reduce smoking to emulate the role model to obtain similar positive outcomes or avoid similar negative consequences. Role model identification, however, did not predict attitude change toward smoking assessed via the IAT. The reason for this may be due to homogeneous attitudes toward smoking across individuals. The present study posited that participants would report more negative implicit attitudes toward smoking following the intervention of role model influence. This prediction, however, assumes a positive attitude

toward smoking prior to the intervention. Findings have indicated that although smokers express positive explicit attitudes toward smoking and hold less negative implicit attitudes toward tobacco use than do nonsmokers, individuals – regardless of smoking status – hold more negative implicit attitudes toward smoking compared to other health behaviors such as eating a healthy diet (Huijdinga, de Jonga, Wiersb, & Verkooijenc, 2005; Swanson, Rudman, & Greenwald, 2001). It may be that smokers display an implicit negative attitude toward tobacco use as they are aware that the behavior is stigmatized in society and know of the various negative outcomes associated with smoking and have internalized this information, thus affecting implicit but not explicit attitudes. Thus, initial negative implicit attitudes toward smoking across individuals may have limited the effects of role model influence on changes in implicit attitudes toward tobacco use assessed via the IAT.

The analyses indicated that negative role models were more predictive of behavioral intentions measures to reduce smoking than were positive role models. Perhaps negative role models, regardless of whether they emphasized health or social outcomes, were more effective at increasing willingness to stop smoking due to the widespread knowledge of negative outcomes associated with tobacco use in contemporary American society. Unlike in the past, today anti-tobacco campaigns are ubiquitous and smoking reduction/cessation policies are implemented more aggressively as evidenced by public policy as well as proliferating advertisements in the media (Farrelly, Nonnemaker, Davis, & Hussin, 2009; Hahn et al., 2008; White, Webster, & Wakefield, 2008; World Health Organization, 2009). Perhaps because the negative health outcomes of smoking are more salient today due to public awareness, young adults are focusing more closely on the negative outcomes of tobacco use, regardless of whether they are health or socially based.

An additional explanation for the effectiveness of negative smoking role models may lie in the nature of smoking itself. In the domain of health, eating a healthy diet, exercising regularly, and refraining from smoking are three common goals individuals aim to achieve. Lockwood and colleagues (2005) found that reading about a positive health role model who exercised frequently and regularly ate fresh fruits and vegetables motivated participants to eat a healthier diet and exercise more frequently. Reading about a negative health role model who rarely exercised and consistently ate junk food, on the other hand, did not have any significant effects on willingness to engage in health behaviors that would lead to positive outcomes. Unlike diet and exercise, tobacco use is a health-relevant behavior with negative connotations and exclusively negative health outcomes. It is possible then that positive role models did not increase behavioral intentions to quit smoking as well as negative role models because individuals typically do not associate positive outcomes with tobacco use due to smoking's negative connotations, thus decreasing salience of positive outcomes mentioned by the positive role models. Since eating healthy foods and regular exercise have positive health connotations and outcomes while smoking has negative health connotations and consequences, perhaps this is the reason that positive role models are more effective at increasing healthy eating and exercise while negative role models are more effective at motivating individuals to quit smoking. As past findings indicate, negative role models can inspire individuals to change their behaviors by providing examples of what not to do (Lockwood, 2002). Since participants are already aware of negative consequences of tobacco use, both health and social, it is conceivable that reading about a negative role model makes negative outcomes more salient, leading to greater rumination and thus increased willingness to quit smoking. Follow up investigations should vary extremity of

positive and negative role models as well as their outcomes associated with tobacco use to examine whether this is indeed the case.

The results indicated that negative role models elicited greater behavioral intentions to reduce smoking at time 2 than at time 1, perhaps due to the sleeper effect. The sleeper effect is known as the process by which individuals initially disregard a persuasive message delivered by a source of questionable credibility, but over time become more agreeable to the message (Hovland, Lumsdaine, & Sheffield, 1949). Participants may have viewed the negative role models as less credible sources of information as they were portrayed unfavorably in comparison to the positive role models. Consistent with this, a meta-analysis found that participants became more persuaded by a message from a less credible source over time if they were motivated to think about the arguments (Kumkale & Albarracin, 2004). Perhaps participants in the current study who were presented with a negative role model initially viewed his/her credibility as suspect, but ruminated over the benefits of smoking cessation over time, thus becoming more susceptible to the sleeper effect leading to higher willingness to reduce smoking at time 2 than at time 1. Given that the results of the present study are unexpected, future research is needed in an attempt to replicate these findings.

The current research can provide future health and communication researchers with greater knowledge of how to better persuade young adults to reduce smoking behaviors based on role model influence. The current findings provide support for the argument that social influence can affect health outcomes as evidenced by participants' willingness to quit smoking after reading about a negative role model experiencing negative outcomes associated with tobacco use. It stands to reason that to obtain higher success rates of smoking cessation, health

researchers and communications experts should emphasize negative outcomes of tobacco use rather than benefits of quitting smoking to encourage smoking cessation.

This study also extends on findings investigating the effectiveness of role model influence in the domains of academics (Lockwood, 2006; Zirkel, 2002; Marx & Roman, 2002; McIntyre et al., 2005; McIntyre et al., 2003), psychological well-being (Yancey et al., 2009; Ziegler & Stoecker, 2008), but especially health (Lankford et al., 2003; Lockwood et al., 2005). The current findings provide support for the utility of role models as agents of social influence. The present study suggests that ruminating over a possible self who will encounter negative outcomes of smoking may increase willingness to reduce or cease tobacco use.

Limitations

As discussed, the present study utilized one presentation mode via written essays to measure the effects of role model influence on smoking reduction. Future investigations ought to vary mode of presentation to determine whether visual and/or acoustic presentations of role models may produce more robust findings. Varying mode of presentation will also help researchers better comprehend how mode of presentation affects persuasion and attitude change, providing greater understanding of how to best target young adults to motivate them to reduce or initially refrain from smoking.

The present study sampled a unique population of college students enrolled in introductory psychology courses with a disproportionate gender distribution. Findings indicate that a common reason for smoking among young adult females is weight control (Cawley et al., 2004; Copeland & Carney, 2003; Pomerleau & Saules, 2007; Potter et al., 2004; Voorhees et al., 2002), suggesting that weight maintenance may be a stronger motive to smoke for women rather than men. The discrepant number of female (74.71%) to male participants in the present study,

however, prevents careful analysis of gender differences. Follow-up investigations should recruit an equal number of male and female participants to examine whether there are indeed gender differences in reasons for smoking and how social role models may differentially motivate male versus female smokers to reduce smoking.

The present study may not have fully differentiated between social and health outcomes associated with tobacco use. For instance, the outcome of skin or teeth problems as a result of smoking are confounded in the sense that they relate to both socially-based and health-based concerns. Additionally, health outcomes are thought to be less relevant or important to young adults due to long-term rather than short-term effects, decreasing the salience of potential consequences. In the present study, however, role models described immediate health outcomes associated with tobacco use, which participants may have thought they were likely to also experience or possibly already experienced, making these consequences relevant. Follow-up investigations should better differentiate between socially-based and health-based outcomes as well as vary the short-term versus long-term effects of tobacco use to better determine what type of role model is most effective at motivating smoking reduction for young adults.

Future Directions

Researchers interested in extending this line of research should consider replicating the methods of the current study, but include a priming manipulation so that participants are primed to think of the same exemplar from time 1 at time 2. According to attitude representation theory (Lord & Lepper, 1999), greater match between one's attitude and one's representation of attitude-relevant stimuli leads to greater attitude-behavior consistency. Thus, if participants were primed to recall the same exemplar across both time sessions, perhaps this would decrease

discrepancy between attitudes and relevant behaviors, thus increasing attitude-behavior consistency, leading to more stable behavioral intentions to quit smoking across time.

The present study measured behavioral intentions to reduce smoking across two time sessions, but actual behaviors were not measured. The current findings, however, may be indicative of how to best motivate individuals to adapt or change their behaviors to obtain positive outcomes in the domain of health. Research has documented significant positive correlations between intentions and behaviors (Sheppard, Hartwick, & Warshaw, 1988). Thus, follow-up investigations measuring both intentions and observable behaviors would provide more conclusive evidence for social influence on health-relevant behaviors, leading to more effective techniques encouraging individuals to promote beneficial rather than detrimental health-relevant behaviors.

Another possibility to consider is the application of the present methodology to other health-relevant behaviors, such as alcohol and/or substance abuse. In treatment programs, a common technique to aid in discontinuation of alcohol/substance use is to provide each member with a sponsor. This sponsor then serves as a guide, sharing his/her experiences with others to encourage newer members to continue the journey to sobriety (Alcoholics Anonymous, 2013). Research on sponsorship in treatment programs has yielded mixed results. For instance, a study indicated that sponsorship in a 12-step program for drug users did not better predict prolonged sobriety versus a control group that did not have sponsors (Crape, Latkin, Laris, & Knowlton, 2002). An investigation focusing on Alcoholics Anonymous, however, suggested that greater involvement (meeting attendance and participation, adhering to the steps, talking to one's sponsor, communicating with other members, reading the Alcoholics Anonymous literature) in treatment programs was less likely to lead to relapse (Sheeren, 1987). Perhaps if newer members

were encouraged to see their sponsors as role models and sponsors emphasized negative outcomes associated with alcohol/substance use as well as successful methods of quitting, this would lead to greater rumination over detrimental consequences of alcohol/substance use, resulting in higher success rates for those enrolled in treatment programs.

Conclusion

Theorists and researchers have long attempted to persuade smokers to decrease tobacco use, yet tobacco use remains the primary source of preventable death (van Meijgaard & Fielding, 2012). Given that tobacco is related to various negative health outcomes including multiple forms of cancer, heart disease, emphysema, respiratory difficulties, and low birth weight, it is important to continue finding additional means to encourage smokers to cease tobacco use, especially those in the young adulthood age range as they are at the greatest risk for tobacco initiation and continued use into early and late adulthood. The present study supports and extends public health campaigns that have argued in favor of role models as effective agents of social influence in motivating young adult tobacco users to reduce smoking behaviors. Role models can act as a form of social influence to motivate individuals to adopt healthier behaviors leading to positive health outcomes. Given the nature of tobacco use with its negative connotation and exclusively negative outcomes, negative role models may be most effective at increasing willingness to quit smoking as they best reinforce negative consequences of tobacco use. Repeated or increased exposure to role models may lead individuals to ruminate over the negative outcomes of smoking, encouraging them to stop smoking.

APPENDIX A HIC APPROVAL FORMS


Pilot Study

**WAYNE STATE
UNIVERSITY**

IRB Administration Office
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
<http://irb.wayne.edu>

NOTICE OF EXPEDITED CONTINUATION APPROVAL

To: Phoebe Lin
Psychology
4425 John R

From: Dr. Scott Millis 
Chairperson, Behavioral Institutional Review Board (B3)

Date: July 31, 2012

RE: IRB #: 065311B3E
Protocol Title: Health and Tobacco Use Survey
Funding Source:
Protocol #: 1106009838

Expiration Date: July 30, 2013

Risk Level / Category: Research not involving greater than minimal risk

Continuation for the above-referenced protocol and items listed below (if applicable) were APPROVED following Expedited Review by the Chairperson/designee of the Wayne State University Institutional Review Board (B3) for the period of 07/31/2012 through 07/30/2013. This approval does not replace any departmental or other approvals that may be required.

- NOTE: Data for this protocol collected between June 30, 2012 and July 31, 2012 is unapproved research, cannot be included with data collected during an approved period, and can never be reported or published as research data.
 - Actively accruing participants
 - Research Information Sheet (dated 6/29/11)
 - Waiver of documentation of consent continued and approved
-

- Federal regulations require that all research be reviewed at least annually. You may receive a "Continuation Renewal Reminder" approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval **before** the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.
- All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
- Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (<http://www.irb.wayne.edu/policies-human-research.php>).

NOTE:

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the IRB Administration Office must be contacted immediately.
2. Forms should be downloaded from the IRB website at each use.

*Based on the Expedited Review List, revised November 1998

Experiment

**WAYNE STATE
UNIVERSITY**



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NOTICE OF EXPEDITED APPROVAL

To: Phoebe Lin
Psychology
4425 John R

From: Dr. Scott Millis *h. Campbell-Vogel*
Chairperson, Behavioral Institutional Review Board (B3)

Date: August 09, 2012

RE: IRB #: 1010909B3E(R)
Protocol Title: Health Attitudes and Behaviors
Funding Source:
Protocol #: 1207011129

Expiration Date: August 08, 2013

Risk Level / Category: 45 CFR 46.406 - Research involving greater than minimal risk and no prospect of direct benefit to individual subjects, but likely to yield generalizable knowledge about the subject's disorder or condition

The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#7)* by the Chairperson/designee for the Wayne State University Institutional Review Board (B3) for the period of 08/09/2012 through 08/08/2013. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (received in the IRB Office 8/8/12)
- Protocol (received in the IRB Office 7/12/12)
- The request for a waiver of the requirement for written documentation of informed consent has been granted according to 45 CFR 46.117(1)(2). Justification for this request has been provided by the PI in the Protocol Summary Form. The waiver satisfies the following criteria: (i) the research involves no more than minimal risk to participants, (ii) the research involves no procedures for which written consent is normally required outside of the research context, (iii) the consent process is appropriate, and (iv) an information sheet disclosing the required and appropriate additional elements of consent disclosure will be provided to participants.
- Research Information Sheet (dated 8/7/12)
- Debriefing Letter
- Data collection tools: Demographics, Positive Health Role Model, Negative Health Role Model, Positive Social Role Model, Negative Social Role Model, Behavioral Intentions to Quit Smoking, and Perceptions of Role Model

* Federal regulations require that all research be reviewed at least annually. You may receive a "Continuation Renewal Reminder" approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval **before** the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.

* All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.

* Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (<http://www.irb.wayne.edu/policies-human-research.php>).

NOTE:

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the IRB Administration Office must be contacted immediately.
2. Forms should be downloaded from the IRB website at each use.

APPENDIX B DEMOGRAPHICS

1. What is your gender?

Female

Male

2. What is your current age? _____

3. What is your ethnic background?

A. African-American

B. Arab-American

C. Asian-American / Pacific Islander

D. Caucasian

E. Latina / Latino

F. Native American

G. Other / Multiracial

4. Please choose the response that best describes your cigarette smoking behavior during the past 12 months.

A. Every day

B. 3 to 6 times a week

C. 1 to 2 times a week

D. 3 to 11 times per year

E. 1 to 2 times per year

F. I didn't smoke in the last year, but have before

G. I've never smoked a cigarette

5. During the past 12 months, how many cigarettes did you smoke on a typical day?

A. 20 or more cigarettes

B. 15 to 19 cigarettes

C. 11 to 14 cigarettes

D. 5 to 9 cigarettes

E. 3 to 4 cigarettes

F. 1 to 2 cigarettes

G. 0 cigarettes

6. Are you currently trying to quit smoking?

Yes

No

7. In the past 12 months, how many times have you attempted to quit smoking? _____

APPENDIX C REGULATORY FOCUS SCALE

Please indicate the extent to which each statement applies to you using the following scale:

1	2	3	4	5	6	7
Strongly disagree	Disagree	Disagree slightly	Neutral	Agree slightly	Agree	Strongly agree

- ___ 1. In general, I am focused on preventing negative events in my life.*
- ___ 2. I am anxious that I will fall short of my responsibilities.*
- ___ 3. I frequently imagine how I will achieve my goals.
- ___ 4. I often think about the person I am afraid I might become in the future.*
- ___ 5. I often think about the person I would ideally like to be in the future.
- ___ 6. I typically focus on the success I hope to achieve in the future.
- ___ 7. I often worry that I will fail to accomplish my goals.*
- ___ 8. I often think about how I will achieve success.
- ___ 9. I often imagine myself experiencing bad things that I fear might happen to me.*
- ___ 10. I frequently think about how I can prevent failures in my life.*
- ___ 11. Overall, I am more oriented toward preventing losses than I am toward achieving gains.*
- ___ 12. My major goal right now is to achieve my ambitions.
- ___ 13. My major goal right now is to avoid becoming a failure.*
- ___ 14. I primarily strive to reach my “ideal self” – to fulfill my hopes.
- ___ 15. I primarily strive to reach the self I “should” be – to fulfill responsibilities.*
- ___ 16. In general, I am focused on achieving positive outcomes in my life.
- ___ 17. I often imagine myself experiencing good things that I hope will happen to me.
- ___ 18. Overall, I am more oriented toward achieving success than preventing failure.

Items with an asterisk measure prevention focus; others measure promotion focus.

APPENDIX D ROLE MODEL ESSAYS

Positive Health Role Model

We are interested in concerns of college students. Since you have an understanding of these issues, we would like to assess your impressions of another student. Below is a description of challenges a student faced while enrolled in college. Please read the description and then respond to the statements based on your evaluation. Thank you.

I am Emily Kowalski / Ebony Freeman / Justin Kowalski / Jamal Freeman, 21 years old from Royal Oak / Detroit, Michigan. *I've recently quit smoking due to reasons related to my health. After being a heavy smoker for many years, I had difficulty with physical activities such as walking, running, or simply climbing a flight of stairs. I noticed that just getting from the parking lot to class is a pain, especially when I'm in a hurry. The other day I got to class and was totally winded and even felt like I would fall down from being dizzy.* I also worry about how my smoking is affecting my skin, hair, and teeth. They're stained and my dentist has told me to switch to a lower tar cigarette otherwise I'll have dental problems as a result.

I became very motivated about my health and my doctor informed me that new health legislation would result in a decrease in my insurance premiums if I stopped smoking. I decided to set long-term goals for myself and became dedicated to following through to meet them. I knew that if I achieved these accomplishments, *I would become healthier and feel better about myself. Now I do what I can to promote my health and positive health outcomes.*

Now that I'm taking steps to better my health, I've noticed improvements already. *I'm still not in top shape, but I no longer get winded getting to class, plus I don't get tired as easily as I did before while walking up the stairs. I've also noticed that my teeth and skin look healthier since I made the change.* Now that I've quit smoking, *I'm very happy with my level of health and fitness because I've done everything I can to promote a better, healthier lifestyle.*

Negative Health Role Model

We are interested in concerns of college students. Since you have an understanding of these issues, we would like to assess your impressions of another student. Below is a description of challenges a student faced while enrolled in college. Please read the description and then respond to the statements based on your evaluation. Thank you.

I am Emily Kowalski / Ebony Freeman / Justin Kowalski / Jamal Freeman, 21 years old from Royal Oak / Detroit, Michigan. After being a heavy smoker for years, *I had difficulty with physical activities such as walking, running, or simply climbing a flight of stairs. I noticed recently that just getting from the parking lot to class is a pain, especially when I'm in a hurry. The other day I got to class and was totally winded and even felt like I would fall down from being dizzy.* I also worry about how my smoking is affecting my skin and teeth. They're stained and my dentist has told me to switch to a lower tar cigarette otherwise I'll have dental problems.

I became very concerned about my health and my doctor warned me that new health legislation will result in an increase in my insurance premiums because I smoke. I became very concerned and decided to take steps toward avoiding health problems. I'm trying to meet my responsibilities in terms of my health because if I don't, I'll become even unhealthier and be disappointed in myself. *Now I do what I can to prevent poor health and avoid negative health outcomes.*

I'm now trying to quit smoking. *I've tried quitting three times already, but I can never seem to make it. I knew quitting smoking would be hard, but I just can't seem to stop for good. I think that if I keep trying though, it'll be worth it because at this point, I'm very unhappy with my level of health and fitness. I'd like to start doing everything I can to avoid health problems I might face in the future if I continue smoking.*

Positive Social Role Model

We are interested in concerns of college students. Since you have an understanding of these issues, we would like to assess your impressions of another student. Below is a description of challenges a student faced while enrolled in college. Please read the description and then respond to the statements based on your evaluation. Thank you.

I am Emily Kowalski / Ebony Freeman / Justin Kowalski / Jamal Freeman, 21 years old from Royal Oak / Detroit, Michigan. *I've recently quit smoking due to reasons related to my social life. After being a heavy smoker for years, I had difficulties with my physical appearance and friends. My skin wasn't as clear as it used to be, plus my teeth and fingernails had tobacco stains. My friends didn't enjoy being around me because I always smelled like smoke and my boyfriend didn't kiss me as much anymore. I also felt embarrassed when I was outside smoking and other people passing by would look at me with disapproval.*

I decided to take active steps toward improving myself. I decided to set long-term goals for myself and became dedicated to following through with them. I knew that if I achieved these accomplishments I would feel better about myself. Now I do what I can to promote positive social outcomes.

Now that I'm taking positive steps in the right direction, I've noticed improvements already. *My skin looks healthier and the stains on my teeth and fingernails are fading. Now when I go out with friends, I get to stay inside because I don't need to grab a smoke anymore. My friends have all noticed and complimented me on these improvements and they're happy to spend time with me again now that I've quit smoking. In fact, my boyfriend noted that kissing me is more enjoyable since I've quit. Now that I've quit, I'm very happy with my appearance and rebuilding my friendships because I've done everything to promote a better, more social lifestyle.*

Negative Social Role Model

We are interested in concerns of college students. Since you have an understanding of these issues, we would like to assess your impressions of another student. Below is a description of challenges a student faced while enrolled in college. Please read the description and then respond to the statements based on your evaluation. Thank you.

I am Emily Kowalski / Ebony Freeman / Justin Kowalski / Jamal Freeman, 21 years old from Royal Oak / Detroit, Michigan. After being a heavy smoker for years, *I've had difficulties with my physical appearance and friends. My skin isn't as clear as it used to be, plus my teeth and fingernails have tobacco stains. My friends didn't enjoy being around me because I smelled like smoke and my boyfriend won't kiss me as much anymore. I also feel embarrassed when I'm outside smoking and people look at me with disapproval.*

I ran into a friend from high school recently and he told me that I look so different now compared to a few years ago, before I started smoking. I became very concerned about my appearance and friendships, deciding to take steps toward avoiding problems in my social life. I decided to try to meet my responsibilities, but I know that if I don't I'll have even more problems and feel very disappointed in myself. Now I do what I can to prevent poor outcomes in terms of my appearance and social life.

I'm now trying to quit smoking. I've tried quitting three times already, but I can never seem to make it. I knew that quitting would be hard, but I just can't seem to stop for good. I think that if I keep trying though, it'll be worth it because at this point, I'm very unhappy with the way I look and the disapproval my friends have expressed about my smoking habits. I'd like to start doing everything I can to avoid any further problems I might have.

APPENDIX E BEHAVIORAL INTENTIONS MEASURE

Please indicate the extent to which each statement applies to you using the following scale:

1	2	3	4	5	6	7
Strongly disagree	Disagree	Disagree slightly	Neutral	Agree slightly	Agree	Strongly agree

- ___ 1. I plan to cut back on the amount of cigarettes I smoke per day.
- ___ 2. I plan to quit smoking within the next six months.
- ___ 3. I plan to quit smoking within the next month.
- ___ 4. I plan to quit smoking within the next two weeks.
- ___ 5. I would be willing to use a nicotine patch to help me quit smoking.
- ___ 6. I would be willing to chew nicotine gum to help me quit smoking.
- ___ 7. I would be willing to seek professional advice to help me quit smoking.
- ___ 8. I would be willing to use other aids to help me quit smoking.

9. Have you tried to quit smoking in the last two weeks? Yes No

10. How important would it be to quit smoking for health reasons?

1-----2-----3-----4-----5-----6-----7
 Not at all important somewhat important very important

11. How important would it be to quit smoking for social reasons?

1-----2-----3-----4-----5-----6-----7
 Not at all important somewhat important very important

12. How important would it be to quit smoking for financial reasons?

1-----2-----3-----4-----5-----6-----7
 Not at all important somewhat important very important

13. How important would it be to quit smoking for professional reasons?

1-----2-----3-----4-----5-----6-----7
 Not at all important somewhat important very important

14. How likely is it that you could become like the person you read about?

1-----2-----3-----4-----5-----6-----7
 Not at all likely somewhat likely very likely

15. How physically healthy did you think the person was?

1-----2-----3-----4-----5-----6-----7
 Not at all healthy somewhat healthy very healthy

16. How active of a social life do you think the person had?

1-----2-----3-----4-----5-----6-----7
 Not at all active somewhat active very active

17. How much of a connection did you feel with the person while reading the essay?

1-----2-----3-----4-----5-----6-----7
 No connection at all somewhat of a connection very strong of a connection

18. How much did you think of your own health while reading the essay?

1-----2-----3-----4-----5-----6-----7
 Not at all somewhat very much

19. How much did you think of your own social life while reading the essay?

1-----2-----3-----4-----5-----6-----7
 Not at all somewhat very much

20. How much did the person in the essay want to quit smoking to improve his/her health?

1-----2-----3-----4-----5-----6-----7
 Not at all somewhat very much

21. How much did the person in the essay want to quit smoking to improve his/her social life?

1-----2-----3-----4-----5-----6-----7
 Not at all somewhat very much

APPENDIX F TABLES

Table 1

Willingness to Reduce Smoking by Role Model Type – Pilot Study

Role Model	N	Mean Intent	Standard deviation
None	18	4.28 _a	1.873
Positive health	18	5.83 _b	1.339
Positive social	14	6.14 _b	1.167
Negative health	16	6.13 _b	1.147
Negative social	12	5.92 _b	2.109

*Note: range of values was 1 = strongly disagree; 4 = neither; 7 = strongly agree.

Means with different subscripts significantly differ using the Tukey posthoc test at the $p < .05$ level.

Table 2

2 (Health Vs. Social) X 2 (Positive Vs. Negative) Analysis of Willingness to Reduce Smoking by Role Model Type – Present Study

Role Model Type	<i>F</i>	<i>P</i>
Interaction (time 1)	0.65	.423
Interaction (time 2)	1.84	.176
Health Vs. Social (time 1)	0.19	.660
Health Vs. Social (time 2)	1.64	.202
Positive Vs. Negative (time 1)	1.20	.275
Positive Vs. Negative (time 2)	1.30	.256

Table 3

2 (Health Vs. Social) X 2 (Positive Vs. Negative) Analysis of Willingness to Reduce Smoking by Role Model Type with Covariates – Present Study

Behavioral intention	F	P
Interaction (time 1)	0.18	.672
Interaction (time 2)	0.78	.378
Health Vs. Social (time 1)	0.062	.804
Health Vs. Social (time 2)	2.27	.134

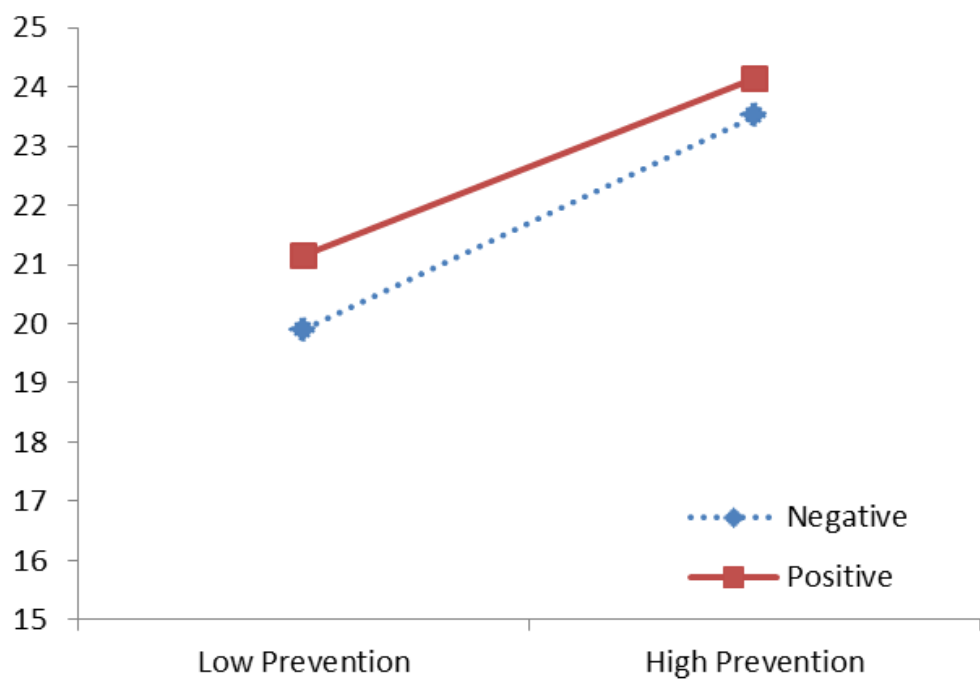
APPENDIX G FIGURES

Figure 1. The effects of prevention regulatory focus on role model type and willingness to reduce smoking at time 1.

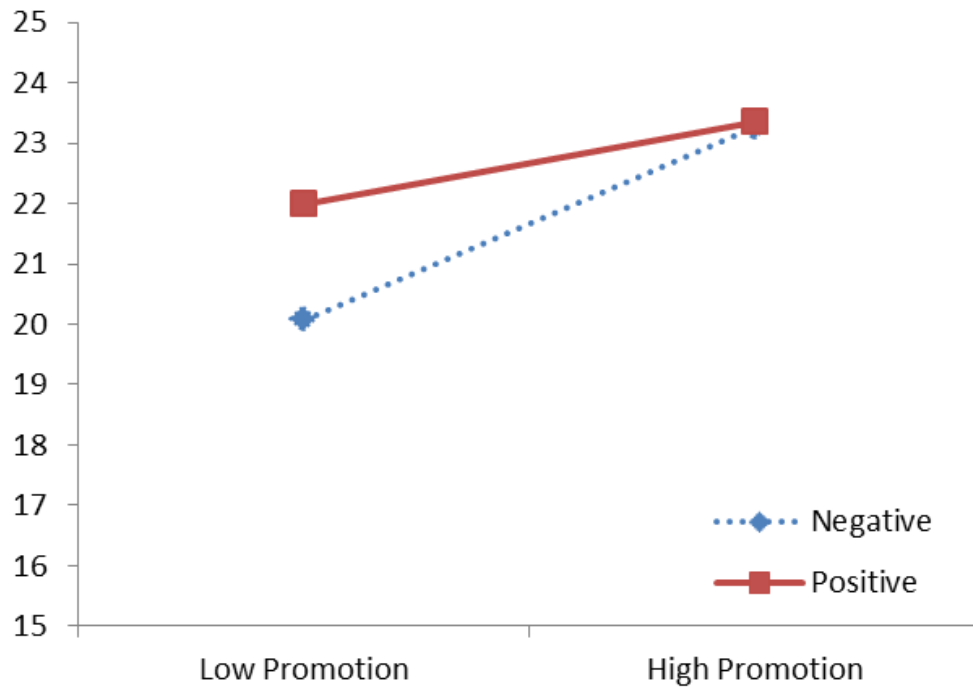


Figure 2. The effects of promotion regulatory focus on role model type and willingness to reduce smoking at time 1.

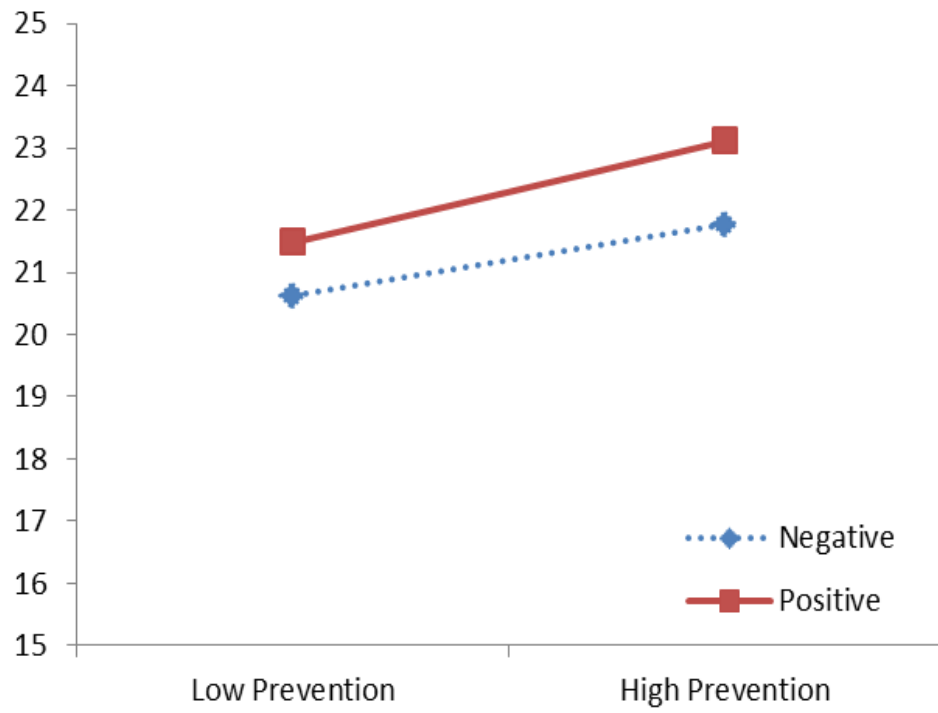


Figure 3. The effects of prevention regulatory focus on role model type and willingness to reduce smoking at time 2.

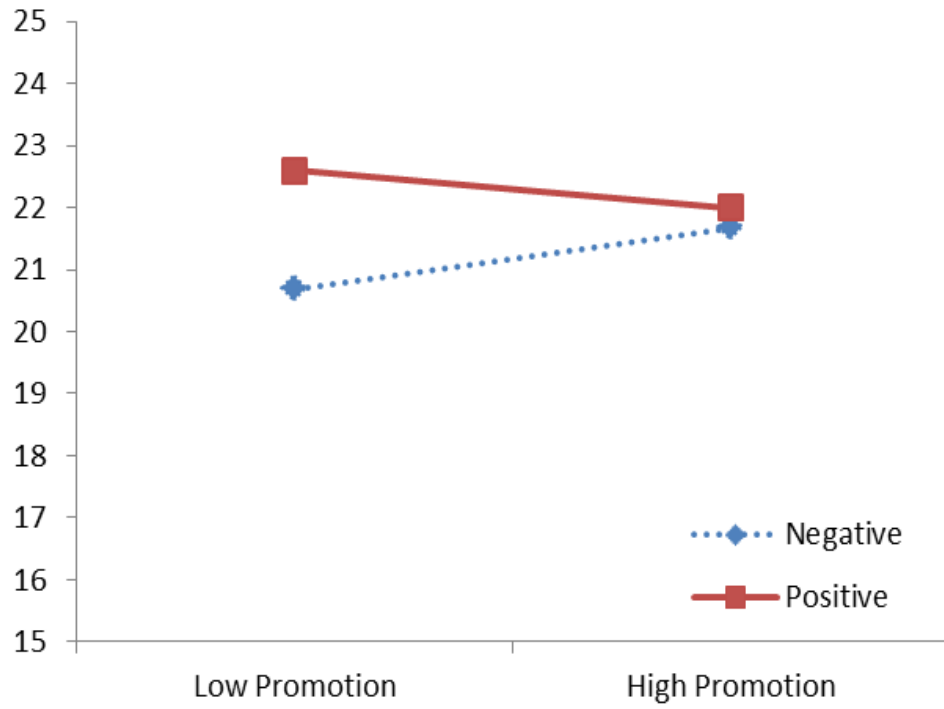


Figure 4. The effects of promotion regulatory focus on role model type and willingness to reduce smoking at time 2.

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ABSTRACT**ROLE MODELS' INFLUENCE ON SMOKING REDUCTION**

by

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Research on social influence has indicated that role models can motivate individuals to change their behaviors and strive for success in the domains of education, occupation, and health. Positive and negative role models have been shown as effective agents of social influence through different mechanisms. Although public health advocates argue that role models can influence smoking cessation, systematic research has yet to investigate the effects of social influence on quitting smoking. The present study investigated the effects of role model influence on smoking cessation. Participants read a story about one of four role models: positive health, negative health, positive social, and negative social role model. Participants then immediately reported willingness to reduce or cease smoking behaviors. These questions were repeated two weeks later. It was found that negative role models were more effective than positive role models in motivating individuals to stop smoking. The study shows important implications for future investigations examining social influence on health-relevant behaviors such that negative role models may be most effective at motivating young adults to reduce or refrain from negative health behaviors associated with detrimental outcomes.

AUTOBIOGRAPHICAL STATEMENT

Phoebe Lin graduated from the University of Michigan in 2005 with distinction. She received a B.A. in Psychology with minors in Anthropology and History. She received her M.A. in Psychology with a minor in Quantitative Methods from Wayne State University in 2009. Her research interests are in social cognition focusing on attitudes, prejudice, and social influence.